

REMARKS

Claims 1-13 are pending. Claims 5 and 7 have been amended herein. Support for the amendments is based on original claim 7.

Applicants' Response to the Claim Rejections under 35 U.S.C. §103(a)

Claims 1-13 stand rejected under 35 U.S.C. §103(a) as being obvious over Celotta et al. in view of Gersonde. In response thereto, applicants have amended claim 5 and respectfully traverse on the basis that not all the limitations of original claims 1, 7 and 8 are set forth in the prior art. Applicants have included the limitation from original dependent claim 7 in independent claim 5.

A rejection under 35 USC §103 must demonstrate that each and every limitation of the claim is disclosed in the prior art. In the present instance, in paragraph 5 of the Office Action, the Office Action acknowledges that Celotta et al. fails to disclose an electro-optic element for controlling the phases of the optical wave or a controller of the electro-optic device. The Office Action applies Gersonde for its disclosure of an electro-optic modulator and a control device. Applicants respectfully submit that Gersonde does not disclose this limitation as claimed in original claims 1, and 8 and amended claim 5.

Gersonde fails to disclose an electro-optic element for controlling the phase of the optical standing wave for controlling the propagation direction of the atomic beam. Gersonde also fails to disclose an electro-optic element drive device for controlling a voltage applied to the electro-optic element to control a refractive index of the electro-optic element. Both of these features are limitations of the claims. Gersonde discloses an electro-optic modulator 79, used to separate laser beam (see col. 13, line 44-52). The laser beam is used to focus the atom beam into just one point as shown in figures 2 and 3A.

On the contrary, as is described at page 12, line 4 of specification and the claims of the present application, the electro-optic element of the present invention is not used "to separate a laser beam according to its phase" but "to control the phase of standing wave by changing the refractive index of the modulator." Further, the position for depositing atoms (the position of nodes or antinodes) is controlled by the phase of the standing wave.


In light of the above, applicants respectfully submit that the combination of Celotta et al. and Gersonde does not teach or suggest each and every limitation of the invention of claims 1, 8 and amended claim 5. Therefore, these claims and their respective dependent claims are not obvious within the meaning of 35 USC §103 in light of the cited prior art.

In view of the amendments and remarks above, applicants now submit that the application is in condition for allowance. Accordingly, a Notice of Allowability is hereby requested. If for any reason it is believed that this application is not now in condition for allowance, the Examiner is welcome to contact applicants' undersigned attorney at the telephone number indicated below to discuss resolution of the remaining issues.

If this paper is not timely filed, applicants petition for an extension of time. The fee for the extension, and any other fees that may be due, may be debited from Deposit Account No. 50-2866.

Respectfully submitted,

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